

WHAT IS CLAIMED IS:

1. A continuous process for preparing a granular detergent agglomerate having a density of at least about 500 g/l, comprising the steps of:
- (a) in a first step, dispersing and mixing a liquid acid precursor of an anionic surfactant with a solid particulate water-soluble alkaline material in a high speed mixer for a mean residence time of about 0.2 to about 50 seconds, wherein the acid precursor is partly or totally neutralized, thereby forming a dry neutralized material comprising a salt of the anionic surfactant precursor in the form of a free-flowing powder; and
 - (b) in a second step, dispersing and mixing an agglomeration binder with the free-flowing powder in a moderate speed mixer, thereby agglomerating the powder into granular detergent agglomerates.
2. A process according to claim 1 wherein the moderate speed mixer is operated at conditions of (i) from about 20 to about 600 seconds of mean residence time, (ii) from about 0.5 to about 5 m/s of tip speed for a mixing tool mounted within the mixing zone, and has cutting elements operating at a tip speed of at least 3 m/s to disperse the viscous surfactant paste as discrete mass units of agglomeration binder.
3. A process according to claim 2 wherein the agglomeration binder is a viscous surfactant paste having a shear-thinning rheology with an apparent yield stress (t_y) of greater than about 50 Pa.
4. A process according to claim 3 wherein the viscous surfactant paste comprises an anionic surfactant selected from the group consisting of alkyl sulfate, alkyl ethoxy(1) sulfate, alkyl ethoxy(3) sulfate, linear alkylbenzene sulfonate, branched alkyl benzene sulfonate, and mixtures thereof.

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5. A process according to claim 3 wherein the agglomeration binder is dispersed into the mixing zone of the second mixer with the free-flowing powder as discrete mass units having an average equivalent diameter of from about 0.5 mm to about 4 mm.
6. A process according to claim 1 wherein the solid particulate water-soluble alkaline material is finely divided sodium carbonate having a mean particle size of less than about 20 microns.
7. A process according to claim 1 wherein the granular detergent agglomerates have a mean particle size of about 400 to 1000 microns, and a geometric standard deviation of less than 2.5.
8. A process according to claim 1 wherein the dry neutralized material is further mixed with an optional liquid and particulate detergent ingredients in an optional intermediate mixing step, before passing as the free-flowing powder into the agglomeration mixer of the second step.
9. A process according to claim 1 wherein the dry neutralized material contains less than about 5% by weight detergent builder material.
10. A process according to claim 9 wherein the granular detergent agglomerates contain less than 5% by weight of detergent builder material.

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6. A process according to claim 1 wherein the solid particulate water-soluble alkaline material is finely divided sodium carbonate having a mean particle size of less than about 20 microns.

7. A process according to claim 1 wherein the granular detergent agglomerates have a mean particle size of about 400 to 1000 microns, and a geometric standard deviation of less than 2.5.

8. A process according to claim 1 wherein the dry neutralized material is further mixed with an optional liquid and particulate detergent ingredients in an optional intermediate mixing step, before passing as the free-flowing powder into the agglomeration mixer of the second step.

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9. A process according to claim 1 wherein the dry neutralized material contains less than about 5% by weight detergent builder material.

10. A process according to claim 9 wherein the granular detergent agglomerates contain less than 5% by weight of detergent builder material.

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